AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A 4Pi microscope comprising:

an interferometer in which two objectives are positioned to oppose one another on different sides of an object plane, and having an optical element for coupling illuminating light into the interferometer and for coupling detected light out of the interferometer and for directing it into a detection beam path, a detected light portion being coupled out by the optical element and not directed into the detection beam path; ~~and~~

a reflecting device configured to reflect illuminating light coupled out by the optical element back into the interferometer and to reflect the detected light portion coupled out by the optical element that is not directed into the detection beam path back into the interferometer; and

a delay element configured to compensate for phase jumps, the delay element arranged between the optical element and the reflecting device.

Claims 2-13 (canceled).

Claim 14 (previously presented): The 4Pi microscope as recited in claim 1, wherein the optical element includes at least one beam splitter.

Claim 15 (previously presented): The 4Pi microscope as recited in claim 14, wherein the beam splitter is a beamsplitter cube.

Claim 16 (previously presented): The 4Pi microscope as recited in claim 14, wherein the reflecting device is positioned directly at the beam splitter.

Claim 17 (previously presented): The 4Pi microscope as recited in claim 14, wherein the reflecting device includes an at least partially reflective coating.

Claim 18 (previously presented): The 4Pi microscope as recited in claim 14, wherein the reflecting device is vapor-deposited onto the beam splitter.

Claim 19 (previously presented): The 4Pi microscope as recited in claim 1, wherein the reflecting device has color-selective reflecting properties.

Claim 20 (previously presented): The 4Pi microscope as recited in claim 1, wherein the reflecting device includes a mirror.

Claim 21 (previously presented): The 4Pi microscope as recited in claim 20, wherein the mirror is convex.

Claim 22 (currently amended): ~~The~~ A 4Pi microscope ~~as recited in claim 1, further~~ comprising:

an interferometer in which two objectives are positioned to oppose one another on different sides of an object plane, and having an optical element for coupling illuminating light into the interferometer and for coupling detected light out of the interferometer and for directing it into a detection beam path, a detected light portion being coupled out by the optical element and not directed into the detection beam path;

a reflecting device configured to reflect illuminating light coupled out by the optical element back into the interferometer and to reflect the detected light portion coupled out by the optical element that is not directed into the detection beam path back into the interferometer; and

a delay element configured to compensate for phase jumps, the delay element arranged between the optical element and the reflecting device.

Claim 23 (previously presented): The 4Pi microscope as recited in claim 22, wherein the optical element, the reflecting device and the delay element form a single unit.

Claim 24 (previously presented): The 4Pi microscope as recited in claim 22, wherein the optical element, the reflecting device and the delay element are cemented together to form a single unit.

Claim 25 (previously presented): The 4Pi microscope as recited in claim 1, wherein the reflecting device is semireflecting.

Claim 26 (previously presented): The 4Pi microscope as recited in claim 25, further comprising a camera configured to monitor an adjustment, the camera configured to receive at least one of illuminating and detected light passing through the reflecting device.

Claim 27 (previously presented): The 4Pi microscope as recited in claim 1, further comprising:

a light source configured to produce the illuminating light; and

an optical diode disposed between the light source and the optical element.

Claim 28 (previously presented): The 4Pi microscope as recited in claim 27, wherein the optical diode includes a Faraday rotator.